

## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)


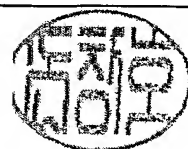
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Applicant's or agent's file reference PCT-E4192	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. <b>PCT/KR2005/000263</b>	International filing date(day/month/year) <b>28 JANUARY 2005 (28.01.2005)</b>	Priority date (day/month/year) 30 JANUARY 2004 (30.01.2004)	
International Patent Classification (IPC) or national classification and IPC  <b>C09K 11/06(2006.01)i</b>			
Applicant  <b>SK CORPORATION et al</b>			

1.	This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.
3.	This report is also accompanied by ANNEXES, comprising: <ul style="list-style-type: none"> <li>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:             <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> </li> <li>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____ containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).</li> </ul>
4.	This report contains indications relating to the following items: <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the report</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>

Date of submission of the demand  <b>24 AUGUST 2005 (24.08.2005)</b>	Date of completion of this report  10 MAY 2006 (10.05.2006)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer  SOHN, Chang Ho  Telephone No. 82-42-481-8398 

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2005/000263

## Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))

☐ publication of the international application (under Rule 12.4)

☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☒ the international application as originally filed/furnished

☐ the description:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ the claims:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ the drawings:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2005/000263

## Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-12	YES
	Claims		NO
Inventive step (IS)	Claims	1-12	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO

### 2. Citations and explanations (Rule 70.7)

1. Claims 1-12 of the present invention relate to an organic electroluminescent polymer having 9,9-di(fluorenyl)-2,7-fluorenyl unit represented by the formula 1, which can be used as a blue electroluminescent polymer and host material by introducing the substituted fluorenyl group at the 9-position of fluorene, and an electroluminescent device using the electroluminescent polymer.

2. Reference is made to the following documents:

D1: US06617051 B1 2003/09/09  
D2: US06517957 B1 2003/02/11  
D3: US05807974 B1 1998/09/15  
D4: US06653438 B1 2003/11/25  
D5: US06652997 B1 2003/11/25

Document D1, which is considered to represent the most relevant state of the art, provides polymers containing fluorene structural elements, monomer parent compounds upon which said polymers are based, and the use of said inventive polymers as organic semiconductors and/or as electroluminescent material, in addition to electroluminescent devices containing said polymers

Also, each of documents D2-D5 discloses an electroluminescent material containing fluorene structural elements.

### 3. Novelty

Each of documents D1-D5 discloses an electroluminescent material containing fluorene structural elements from which claim 1 of the present invention differs in that the substituted fluorenyl group at the 9-position of fluorene is introduced. Therefore, the novelty of the subject matter of claim 1 can be acknowledged under PCT Article 33(2).

(Continued on Supplemental Box)

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.  
Continuation of:

Box No. V

4. Inventive step

Claim 1 of the present invention relates to an organic electroluminescent polymer having 9,9-di(fluorenyl)-2,7-fluorenyl unit represented by the formula 1, which can be used as a host material by introducing the substituted fluorenyl group at the 9-position of fluorene. Even though D1 teaches an electroluminescent material containing fluorene structural elements, the unique chemical structure of the present invention can not be easily derived from the structural change in the D1-D5 within the scope of the customary practice followed by persons skilled in the art. Moreover, the advantages such as having a high luminous efficiency and superior heat stability of the present invention cannot readily be foreseen. Consequently, the subject matter of claims 1 of the present application is considered as involving an inventive step under PCT Article 33(3).

5. Industrial applicability

No opinion will be formulated with respect to the industrial applicability of this subject matter such as electroluminescent material containing fluorene for display device. (PCT Article 33(4)).